



INTERCONNECTION STANDARDS

For Customer-Owned, Grid Connected Electric Generating Systems of 25 kW or Less (Residential), or 199 kW or less (Non-Residential)

A. General

This document sets forth the requirements and conditions for interconnected non-utility-owned electric generation where such generation may be connected for parallel operation with the electrical system of Forest Grove Light and Power (FGL&P). Generating systems will be permitted to interconnect to FGL&P's electric distribution system (15 KV and below) only after a determination by FGL&P that such interconnection will not interfere with the operation of the distribution circuit.

B. Interconnection Requirements

1. Customer shall comply with the latest applicable National Electric Code (NEC Articles 690 and 705), National Electric Safety Code, State of Oregon, and building code requirements; and shall obtain electrical permit(s) for the equipment installation.
2. Customer shall provide meter equipment and meter base per FGL&P requirements.
3. Customer's overcurrent device at the service panel shall be marked to indicate power source and connection to FGL&P's distribution system.
4. Customer shall assume the full responsibility for all maintenance of the generator and protective equipment and keeping of records for such maintenance. These records shall be available to FGL&P for inspection at all times.
5. Customer's power production control system shall comply with NEC Articles 690 and 705; and applicable and current Institute of Electrical and Electronics Engineers (IEEE) Standards 929 for parallel operation with FGL&P; in particular the:
 - a. Power output control system shall automatically disconnect from the FGL&P power source upon loss of FGL&P voltage and not reconnect until FGL&P's voltage has been restored for at least five (5) minutes continuously.
 - b. Power output control system shall automatically initiate a disconnect from the FGL&P source within six (6) cycles (0.1 seconds) if Customer's voltage falls below 60 Volts rms to ground (nominal 120 V rms base) on any phase.
 - c. Power output control system shall automatically initiate a disconnect from FGL&P's system within two (2) seconds if the voltage rises above 132 Volts rms phase to ground or falls below 106 Volts rms phase to ground (nominal 120 V rms base) on any phase.

6. Customer shall pay all costs associated with the design, installation, operation, and maintenance of the generation equipment on the Customer's side of the meter. Customer shall describe and document how the protection devices will achieve compliance with the requirements of this policy.
7. Customer shall deliver the excess energy to FGL&P at Customer's premises. FGL&P will install and maintain a revenue meter capable of registering the bi-directional flow of electricity at Customer's premises at a level of accuracy that meets all applicable standards, regulations and statutes. At the option of FGL&P, a separate meter may be installed to measure production of the renewable generation source. Customer shall pay for any non-standard meter electrical hook-up requested by Customer.
8. Customer shall not commence parallel operation of the generation equipment until FGL&P has inspected and issued written approval of the interconnection facilities. Such approval shall not be unreasonably withheld. FGL&P shall have the right to have representatives present at the initial testing of Customer's protective apparatus, and shall retain the right to periodically inspect the facility to ensure that appropriate safety standards continue to be met.
9. Once in operation, Customer shall make no equipment, wiring, or the mode of operation changes or modifications without the prior approval of FGL&P.
10. Solar Photovoltaic Equipment shall be in compliance with Underwriters laboratories (UL) 1741, *Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Systems*; UL 1703, *Standard for Safety; Flat-Plate Photovoltaic Modules and panels*; and IEEE 1262, *Recommended Practice for Qualification of Photovoltaic (PV) Modules*; and the solar system shall be installed in compliance with IEEE Standard 929, *Recommended Practice for Utility Interface of Photovoltaic Systems*.

C. Safety

1. All safety and operating procedures for joint use equipment shall be in compliance with the Occupational Safety and Health Administration (OSHA) standard 29 CFR 1910.269, the National Electrical Code (NEC), State of Oregon rules, FGL&P standards, and equipment manufacturer's safety and operating manuals.
2. The Customer must install and maintain a manual disconnect switch that will disconnect the net metering facility from the FGL&P system. The disconnect switch must be a lockable, load-break switch that plainly indicates whether it is in the open or closed position. The disconnect switch must be readily accessible to FGL&P at all times and located within 10 feet of the meter.
 - a. For customer services of 600 volts or less, a disconnect switch will not be required for a net metering facility that is inverter-based with a maximum rating as shown below:

Service Type	Maximum Net Metering Facility Size (kW)
240 Volts, Single-phase, 3 Wire	7.2
120/208 Volts, 3-Phase, 4 Wire	10.5
120/240 Volts, 3-Phase, 4 Wire	12.5
277/480 Volts, 3-Phase, 4 Wire	25.0

- b. For other service types, the net metering facility must not impact the customer-generator's service conductors by more than 30 amperes.
- c. **It should be noted that, if the customer chooses to not install a disconnect switch as allowed by C.2.a., the customer's meter may be pulled, disconnecting the electric service beyond the meter, if the net metering facility must be physically disconnected for any reason.**
- d. The disconnect switch may not be located more than 10 feet from the FGL&P meter. FGL&P must approve the location of the disconnect switch prior to the installation of the net metering facility.

D. Terms of net metering billing and crediting

1. If a Net Metering Facility uses more electricity than is fed back into FGL&P's system during a billing period, the Customer-generator will be billed for the net energy consumed based on the rate applicable to their class of service.
2. If the Net Metering Facility feeds back into FGL&P's system more electricity than is used by the Customer-generator's owner during a billing period, the Customer-generator will be billed the customer charge applicable to their class of service and be credited for the excess electricity generated and fed to FGL&P's system.
3. For the billing period ending in March of each year, any unused credits that have accumulated during the previous twelve months will be applied to FGL&P's low- income assistance program.
4. The primary intent of a Net Metering Facility must be to offset part or all of the Customer-generator's own electrical load. For existing locations, the maximum output of the Net Metering Facility in kWh/year shall not exceed 100% of the average annual use for the last three calendar years at that location.

E. Aggregation of meters for net metering

1. Upon request from the Customer-generator, FGL&P will aggregate for billing purposes the monthly kWh usage of the Customer's designated meter and any additional meters of the Customer-generator, where all meters are located on the Customer's contiguous property and are served by the same primary feeder. A 60 day advance notice is required for requests to aggregate meters.
2. Meters will be aggregated as follows: Generation will first be credited to the designated meter. If there is more generation than consumption at the designated meter, netting will continue with the next meter in the rank order chosen by the Customer. Aggregated meters subject to the same rate schedule as the designated meter must be ranked above any other meters. A change in the rank order used for netting calculations of already aggregated meters is allowed at the beginning of the next annual billing period only and requires a 60 day advance notice.